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ABSTRACT

The summary report compared the effectiveness of self-instructional guided inquiry materials with self-instructional expository materials on student's performance as measured by tests of cognitive learning, retention, immediate and delayed transfer. The study was conducted in 4 high schools in Georgia. Treatment preparation for the experiment consisted of the development of 2 versions of a unit entitled "Education for American Indians"--a book of readings and an expository essay. The upper secondary students who served as subjects were randomly assigned to 1 of the treatment materials within each class in each school. All were given the word meaning section of the Iowa Silent Reading Test to determine relative reading ability level. The study lasted from 10-17 days in each school. There were originally 169 students in the study but 61 dropped. The type of statistical analysis used was a completely randomized multivariate analysis of variance. All materials and tests were pilot tested at Greene County High School in Greensboro, Georgia. The main finding did not indicate a statistically significant superiority for either treatment across ability groups. Upper ability students performed better using self-instructional expository materials than any other combination of treatment and ability groups. Future research suggestions included using a larger, more representative sample. (FF)

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SUMMARY REPORT

DUANE DEAN DUMBLETON. The Effects of Guided Inquiry and Expository Materials on Cognitive Learning, Retention, and Transfer in a Social Studies Unit for Secondary Level Students. Anthropology Curriculum Project. Athens, Georgia: University of Georgia, 1973. Unpublished dissertation. 139 pp.

Main Finding

The results of the study did not indicate a statistically significant superiority for either treatment across ability groups. However, upper ability students apparently performed better using self-instructional expository materials than any other combination of treatment and ability groups.

Purpose

The purpose of this study was to compare the effectiveness of self-instructional guided inquiry materials with self-instructional expository materials on students' performance as measured by tests of cognitive learning, retention, immediate and delayed transfer. The treatment consisted of a self-instructional guided inquiry and a self-instructional expository unit, which were the first four chapters of the student text, Education for American Indians, Publication Nos. 73-1 and 73-2, Anthropology Curriculum Project, University of Georgia.

Hypotheses

The major hypothesis investigated was that students using the self-instructional guided inquiry materials will score significantly higher ($p<.05$) than will students using self-instructional expository materials as measured by the posttests of cognitive learning and immediate transfer, and delayed posttests of cognitive retention and delayed transfer. Secondary hypothesis investigated the effects of reading ability as a variable interacting with the treatment materials.

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Treatment Materials

Treatment preparation for the experiment consisted of the development of two versions of a unit entitled Education for American Indians. Treatment one was a book of readings utilizing documents and source readings. Treatment two was an expository essay. Both treatments contained the same general facts and concepts. The major difference in the two treatments was the methods of organization of the content. A single self-instructional workbook was developed so that common questions could be utilized for both treatment units. All materials were designed to be used without the aid of the teacher.

Procedures Used in the Study

The study was conducted in four schools: Cherokee High, Choctaw Central High, Clarke Central High, and Toccoa Falls Academy. Two upper secondary classes were selected from each school. The students who served as the subjects for the study were randomly assigned to one of the treatment materials within each class in each school. All students were given the word meaning section of the Iowa Silent Reading Test to determine relative reading ability level. The total sample of students was divided into three reading ability groups for analysis purposes. Students were not distinguished as to school or grade level in the data analysis.

The investigator personally met with each teacher and appropriate school officials to explain the study and procedures. Written instructions were also provided. Teachers were encouraged not to help the students learn the content of each unit, as these were self-instructional materials.

The study lasted between 10 and 17 days in each school. All schools gave the posttests on April 25, 26, or 27. All schools except one gave the delayed posttests on May 22 or 24. Students spent about the same amount of time on either of the self-instructional treatment units they were studying. There were originally 169 students in the study but 61 were dropped because of not taking or not completing one or more of the tests.

The type of statistical analysis used was a completely randomized multivariate analysis of variance. The scores from the four tests were used. The posttests measured cognitive learning of the content and immediate transfer of learning to similar material. The delayed posttests were given a month later to measure retention of learning and amount of delayed transfer. The scores are summarized in Table 1.

All materials and tests were pilot tested before the experiment at Greene County High School in Greensboro, Georgia.

Results of the Study

The results of the study are summarized in Table 2. The research hypotheses were designed to test whether self-instructional guided inquiry materials (readings book) were more or less effective than self-instructional expository materials (essay book) on students' performance as measured by tests of cognitive learning, immediate transfer, retention, and delayed transfer. The findings of the study did not support the overall greater effectiveness for either guided inquiry or expository materials.

Neither the students who studied the self-instructional guided inquiry materials nor the students who studied the self-instructional expository materials scored significantly higher than the other on any of the posttests. High reading ability students using the expository materials scored somewhat higher than students using the guided inquiry materials on all posttests, but the higher expository scores were not enough higher to be significant. All other students did about the same no matter which type of materials they used.

As expected, all students of high reading ability in both treatment groups scored significantly higher on all posttests than did students of middle or lower reading ability. The only combination of treatment materials and reading ability which showed a significant result was that of high reading ability and self-instructional expository materials on the delayed transfer posttest.

Analysis of the results also showed that students forgot some of what they learned from the time of the posttests to the time of the delayed posttests one month later. It was clear, however, that much learning had taken place for all groups of students. Also, the findings show that students were able to transfer their learning to similar material.

Conclusions of the Study

The self-instructional curriculum materials used in the study, which focus on concepts dealing with the anthropology of education, can be effectively used by upper secondary students. Both the self-instructional guided inquiry and the self-instructional expository formats proved to be effective in facilitating learning. The self-instructional format, however, is more appropriate for upper ability students than lower ability students.

The findings of this study seem to confirm previous research findings, i.e., that inconclusive results are obtained when inquiry and expository materials are compared. Both facilitate learning, but neither is more effective than the other.

The results and limitations of this study indicate that further research is necessary. Future research might include repeating the study with a larger, more representative sample; varying the amount of time students use the two different types of materials; varying the times of testing; examining other variables such as grade level, personality factors, or socio-economic status; and implementing the self-instructional materials so that teacher-students and student-student interactions can take place.

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Pilot Testing

Greene County High School, Greensboro, Georgia

Principal: Mr. Donald Garrett
Teacher: Mr. William Nesbitt

Field Testing

Cherokee High School, Cherokee, North Carolina

Reservation Principal: Ray Cleaveland
Teachers: James Bryson
Clyde Bumgarner
Observer: Robert Christopher, Supervisor

Choctaw Central High School

Reservation Principal: Wayne Adkinson
Teacher: Marcella Gibson
Observer: Katherine Trapp, Vice Principal

Clarke Central High School

Principal: Donald Hight
Teacher: Aleta Henderson
Observer: John Tillitski, Vice Principal

Toccoa Falls Academy

Principal: W. Forrest Wheeler
Teacher: Kenneth Sanders
Observer: Harold A. Windass, Counselor

TABLE 11

Raw Mean Scores from Cognitive Learning and Immediate Transfer Posttests and Cognitive Retention and Delayed Transfer Delayed Posttests by Treatment Group and Reading Ability (Word Meaning Only) Levels

		Groups by Ability			
Test	Treatment	High	Middle	Low	Total
Learning[1]	T_1[3]	32.24	25.59	23.59	27.14
	T_2[4]	36.95	28.61	23.33	30.02
Total	Learning	34.84	27.14	23.46	28.66
Immediate Transfer[2]	T_1	26.71	19.12	17.12	20.98
	T_2	30.38	20.61	16.72	22.98
Total	Immediate Transfer	28.74	19.89	16.91	22.04
Retention	T_1	27.94	23.00	19.12	23.35
	T_2	34.81	22.00	19.11	25.81
Total	Retention	31.74	22.49	19.11	24.65
Delayed Transfer	T_1	19.65	15.82	16.88	17.45
	T_2	27.38	14.44	13.50	18.91
Total	Delayed Transfer	23.92	15.11	15.14	18.22

[1]Learning/Retention test had 50 items
[2]Immediate and Delayed Transfer test had 43 items
[3]Self-instructional Guided Inquiry materials
[4]Self-instructional Expository materials

TABLE 30

Summary of Results of Research Hypotheses

Research Hypotheses*	Result
1. Self-instructional guided inquiry group scores will be significantly**higher than self-instructional expository group scores on posttests of: a) cognitive learning b) immediate transfer c) cognitive retention d) delayed transfer	Treatment nonsignificant on all measures**
2. Students of high ability will score significantly** higher than students of middle or low ability on posttests of: a) cognitive learning b) immediate transfer c) cognitive retention d) delayed transfer	Ability significant at .01 level for all posttests and delayed posttests
3. Students of high ability using guided inquiry materials will score significantly** above expectations based on main effects than any other combination of treatment and ability on posttests of: a) cognitive learning b) immediate transfer c) cognitibe retention d) delayed transfer	Interaction treatment x ability significant** only for high ability, expository treatment group on the delayed transfer posttest.
4. Students using either treatment will score significantly higher** on: a) the cognitive learning posttest than on the cognitive retention delayed posttest; b) the immediate transfer posttest than on the delayed transfer posttest.	Posttests significant at the .01 level for both cognitive learning and immediate transfer

* See page 57, Chapter IV, for a list of research hypotheses.

** Tested at the .05 level of significance.